Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

Claim 1 (Original): A system for classifying an input image into one of a plurality of output classes, said system comprising:

a plurality of pattern recognition classifiers, each pattern recognition classifier operative to process feature data associated with the input image to determine an associated output class of the input image; and

a plurality of feature extractors, each feature extractor extracting feature data from the input image for an associated one of the plurality of pattern recognition classifiers according to a classifier grid model representing the associated classifier.

Claim 2 (Original): The system of claim 1 wherein a given feature vector applies the classifier grid model representing its associated classifier to the input image to produce a plurality of sub-images, the feature extractor extracting feature data relating to each of the plurality of sub-images.

Claim 3 (Original): The system of claim 1 wherein at least one of the plurality of pattern recognition classifiers includes a support vector machine.

Claim 4 (Original): The system of claim 1 wherein at least one of the plurality of pattern recognition classifiers includes an artificial neural network.

Claim 5 (Original): The system of claim 1 further comprising an image source that provides the input image.

Claim 6 (Original): The system of claim 5 wherein the image source includes a stereo camera.

Claim 7 (Original): The system of claim 1 further comprising an arbitrator associated with the plurality of pattern recognition classifiers that evaluates a plurality of outputs associated with the classifiers and determines an associated output class for the input image from the plurality of classifier outputs.

Claim 8 (Original): The system of claim 1 further comprising an image preprocessor that removes background information and noise from the input image.

Claim 9 (Original): The system of claim 8, the image preprocessor applying a contrast limited adaptive histogram equalization that adjusts the image for lighting conditions.

Claim 10 (Original): The system of claim 1 wherein each of the plurality of classifiers represents at least one associated output class and classifier grid model associated with the each classifier is derived from training images associated with the at least one associated output class.

Claim 11 (Original): A system for classifying image data associated with a vehicle occupant safety system into one of a plurality of output classes, said system comprising:

a vision system that images a vehicle interior to provide an input image;

a plurality of pattern recognition classifiers, each pattern recognition classifier having an associated output class and being operative to determine if the input image is a member of the associated output class; and

a plurality of feature extractors, each feature extractor being associated with one of the plurality of pattern recognition classifiers and extracting feature data from the input image according to a classifier grid model associated with its associated classifier.

Claim 12 (Original): The system of claim 11 wherein at least one of the plurality of output classes represents a human adult seated within the vehicle interior.

Claim 13 (Original): The system of claim 11 wherein at least one of the plurality of output classes represents a rearward facing infant seat positioned within the vehicle interior.

Claim 14 (Original): The system of claim 11 wherein at least one of the plurality of output classes represents a human head.

Claim 15 (Original): The system of claim 11, the vision system comprising a stereo vision system that produces three-dimension image data of the vehicle interior as a stereo disparity map.

Claim 16 (Original): A method for classifying image data into one of a plurality of output classes comprising the steps of:

establishing a classifier grid model associated with a pattern recognition classifier;

imaging an unknown object to create an input image;

overlaying the classifier grid model over the input image to produce a plurality of sub-images;

extracting feature data from the plurality of sub-images; and

classifying the unknown object from the extracted feature data.

Claim 17 (Original): The method of claim 16 wherein the step of establishing a classifier grid model includes:

generating a representative image that represents at least one output class associated with the classifier;

dividing the representative image according to an initial grid pattern to form a plurality of sub-images;

identifying at least one sub-image formed by said grid pattern having at least one attribute of interest; and

modifying said grid pattern in response to the identified at least one sub-image having said at least one attribute of interest so as to form a modified grid pattern.

Claim 18 (Original): The method of claim 17 wherein the step of generating a representative image includes combining a plurality of training images associated with the classifier.

Claim 19 (Original): The method of claim 17, wherein the step of modifying the grid pattern includes modifying the grid pattern to divide the identified sub-images into respective pluralities of sub-images.

Claim 20 (Original): The method of claim 17 wherein the steps of identifying at least one sub-image and modifying the grid pattern in response to the identified sub-image are repeated iteratively until a termination event is recorded.

Claim 21 (Original): The method of claim 20 wherein the termination event comprises producing a modified grid that divides the class composite image into a threshold number of sub-images.

Claim 22 (Original): The method of claim 16 wherein extracting feature data from the plurality of sub-images includes extracting a set of at least one feature value from each sub-image, such that each sub-image provides an equal number of feature values to an associated feature vector.

Claim 23 (Currently amended): The method of claim 22 wherein the at least <u>one</u> feature value includes an average grayscale value associated with each sub-image.

Claim 24 (Currently amended): The method of claim 22 wherein the at least <u>one</u> feature value includes a coarseness measure associated with each sub-image.

Claim 25 (Currently amended): The method of claim 22 wherein the at least <u>one</u> feature value includes a contrast measure associated with each sub-image.

Claim 26 (Original): The method of claim 16, wherein imaging an unknown object includes imaging an occupant of a passenger seat within a vehicle.